

We claim:

1. An etched metal article, the metal article comprising:
a compression-formed particulate metal object;
wherein a portion of the compression-formed particulate metal object has been
5 selectively removed by an abrasive etching process from at least one surface of the
object.
2. The etched metal article of claim 1, wherein the object further comprises an
impregnant contacting at least a portion of the metal particles in the compression-formed
10 particulate metal object.
3. The etched metal article of claim 1, wherein the metal particles are selected from
the group iron, stainless steel, aluminum, nickel, magnesium, brass, bronze, copper, tin,
zinc, lead, and alloys and combinations thereof.
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4. The etched metal article of claim 1, wherein the compression-formed particulate -
metal object is impregnated with an impregnant liquid prior to etching.
5. The etched metal article of claim 1, wherein the compression-formed particulate -
20 metal object is partially sintered prior to etching and is impregnated with an impregnant
liquid after being partially sintered but before being etched.

6. The etched metal article of claim 1, wherein the article further comprises a non-particulate object, the non-particulate object joined to the particulate metal object prior to etching of the particulate metal object

5 7. The etched metal article of claim 1, wherein the article further comprises an etch resistant object, the etch-resistant object joined to the particulate metal object prior to etching of the particulate metal object;

wherein the etch resistant object is significantly more etch resistant than the particulate metal object.

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8. The etched metal article of claim 1, wherein the article further comprises an etch resistant object, the etch-resistant object joined to the particulate metal object prior to etching of the particulate metal object;

wherein the etch resistant object is at least 50 percent more etch resistant than the particulate metal object to etching with particulate abrasives.

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9. The etched metal article of claim 1, wherein the metal particles are at least partially sintered before abrasive etching of the object.

20 10. The etched metal article of claim 1, wherein the metal particles are at least partially sintered after abrasive etching of the object.

11. The etched metal article of claim 1, wherein the metal object is infiltrated with a molten metal.

12. The etched metal article of claim 1, wherein the object has a density at least 85 percent of the solid metal comprising the metal particles.

13. The etched metal article of claim 1, wherein the object has a density at least 80 percent density of the solid metal comprising the metal particles.

14. The etched metal article of claim 1, wherein the object has a density at least 70 percent density of the solid metal comprising the metal particles.

15. The etched metal article of claim 1, wherein the object has a density of at least 60 percent density of the solid metal forming the metal particles.

16. The etched metal article of claim 1, wherein the object has a density of at least 50 percent density of the solid metal forming the metal particles.

17. A method of making an imaged metal object, the method comprising:

providing a particulate metal composition;

compressing the particulate metal composition such that the particulate metal composition forms a metal-containing object, the object having a density of between 60 and 90 percent of the density of the metal forming the particulate metal composition; and

abrasively etching a image into the particulate metal composition so as to remove
a portion of the object.

18. The method of claim 17, further comprising impregnating the object with a non-
5 metallic composition before or after abrasively etching an image.

19. The method of claim 17, further comprising providing a mask over a portion of
the metal-containing object so as to form a selectively etchable object.

10 20. The method of claim 17, further comprising at least partially sintering the metal
metal-containing object before or after etching.

21. The method of claim 17, further comprising impregnating the metal-containing
object after sintering but before etching.

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22. The method of claim 20, wherein the particulate metal composition is at least
partially sintered after etching the image into the object.

23. The method of claim 20, wherein the particulate metal composition is at least
20 partially sintered before etching the image into the object.

24. The method of claim 17, wherein the metal-containing object has a density of at least 70 percent of the density of the solid metal forming the particulate metal composition.

5 25. The method of claim 17, wherein the metal-containing object has a density of at least 80 percent of the density of the solid metal forming the particulate metal composition.

26. The method of claim 17, wherein the metal-containing object is secured to a
10 second layer after compression forming of the object, said second layer providing a backing for the metal containing object.

27. The method of claim 17, wherein the metal-containing object is secured to a
second layer after compression forming of the object, said second layer providing a cover
15 layer for the metal containing object.

28. The method of claim 27, wherein the cover layer is removable by etching.

29. The method of claim 17, wherein the metal object is compression formed by a roll
20 press.

30. The method of claim 17, wherein the metal object is compression formed by a piston press.

31. An etched metal article, the metal article comprising:

a multi-layer object comprising:

a) a compression-formed particulate metal layer, the particulate metal layer
5 formed by pressing a substantially free-flowing particulate material under
sufficient pressure such that it forms a substantially rigid sheet and
impregnating the sheet with an impregnant such that the rigid sheet is
readily etchable by abrasive etching, and

b) an etch-resistant layer in contact, or near contact, with the particulate
10 metal layer, the etch-resistant layer having at least twice the resistance to
abrasive etching as the compression-formed particulate metal layer;

wherein a portion of the compression-formed particulate metal layer has been
selectively removed to expose the etch-resistant layer

15 32. The etched metal article of claim 31, wherein the etch-resistant layer comprises a
solid metal object.

33. The etched metal article of claim 31, wherein the portion of the compression-
formed particulate metal layer is selectively removed by using a photosensitive mask.

20 34. The etched metal article of claim 31, wherein the compression-formed particulate
metal layer is partially sintered before being impregnated.